

FURTHER STUDIES OF THE OKLAHOMA FLORA

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FURTHER studies of the Oklahoma flora have resulted in increased data concerning the distribution of species within the state, including several not found previously recorded in monographs, floras or check-lists as occurring within Oklahoma. In the following account the latter taxa are prefixed with an asterisk. Unless otherwise indicated the cited material will be found in the herbarium of Oklahoma A. & M. College.

**SAGITTARIA PAPILLOSA* Buchenau. So referred is *Wehling 55*, 6 miles east of Harris, McCurtain County, June 15, 1946. This number has the obovate achenes, glabrous filaments and papillose bracts as described for *S. papillosa* by J. G. Smith (Mo. Bot. Gard. Rept. 6: 55. 1894) rather than the falcate achenes and glabrous filaments of *S. ambigua*, or the falcate achenes and arachnoid filaments of *S. lancifolia*. The distribution of *S. papillosa* was given by J. G. Smith (l. c.) as "shallow ponds, Texas and Louisiana."

**DIGITARIA VIOLASCENS* Link. The collections referred to this have short, narrow spikelets (less than 2 mm. long and about 0.7 mm. wide), dark lemmas, winged rachises and glabrous sheaths. They are: *Waterfall 10458*, wooded flats with *Sabal*, 3 miles south of Tom, McCurtain County, October 13, 1951; *Waterfall 10513*, along Little River, 0.3 miles south of Honobia, Pushmataha County, October 14, 1951. In Hitchcock's Manual (p. 578, 1950) Arkansas and Texas are given as constituting the western limit of this species' range in the United States.

**PANICUM GYMNOCARPON* Ell. This species is characterized by its stipitate smooth fruit about one-third as long as the second glume, which is about 6 mm. in length, and slightly longer than the sterile lemma, the latter being a little longer than the first glume. It has previously been known from as far west as Arkansas and eastern Texas (Hitchcock's Manual, p. 706, 1950). We have it from the extreme southeastern part of Oklahoma as *Waterfall 10412*, edge of Taxodium swamp 3 miles south and 1 east of Eagletown, McCurtain County, October 13, 1951.

**PASPALUM PUBIFLORUM* Rupr., var. *PUBIFLORUM*. Our material has all hitherto been referred to var. *glabrum* Vasey which has glabrous spikelets. We have one sheet of the typical variety with pubescent spikelets. It is: *McLean*, along Red River, 5 (15?) miles south of Durant, Bryan County, June 20, 1936.

**SPOROBOLUS ASPER* (Michx.) Kunth, var. *PILOSUS* (Vasey) Hitchc. In the eighth edition of Gray's Manual (154. 1950) Fernald states that the range of this variety is "E. Kans. to Texas." Chase (Hitchcock's Manual p. 417. 1950) says "Kansas, Texas . . . and Montana." We have several sheets of *S. asper* with pilose sheaths and blades.

**FIMBRISTYLIS AUTUMNALIS* (L.) R. & S., forma *BRACHYACTIS* (Fern.) S. F. Blake. The form with suppressed inflorescence rays, or with the inflorescence reduced to one spikelet, was collected as *Waterfall 10219*, in mud at edge of pond, 3 miles east of Braggs, Muskogee County, July 17, 1951.

**SCLERIA PAUCIFLORA* Muhl., var. *CAROLINIANA* (Willd.) Wood. The pilose variety was collected as *Waterfall, 10069*, open woods, top of limestone hill, 8 miles northeast of Tahlequah, Cherokee County, June 25, 1951. The nearest area from which the variety was previously known according to Fernald (Gray's Manual, 292. 1950) is Missouri.

**JUNCUS FILIPENDULUS* Buckley. The individual plants are somewhat similar in appearance to *J. repens*, although they are not repent. However the capsule is obovate and shorter than the narrow, linear-triangular fruit of *J. repens*. Engelmann, in his North American Species of *Juncus*,¹ cites material from Arkansas and Texas. This is done under the substitute name *J. leptocaulis*, a manuscript name of Torrey and Gray "from a label in Mr. Durand's herbarium." Engelmann says "I had to change the only published name of this species, *J. filipendulus*, because it is absolutely wrong, the fibrous rootlets bearing no tubers at all . . ." This procedure is, of course, contrary to the present Rules. Article 59 states "A name . . . must not be rejected . . . merely because it is badly chosen . . ." Buchenau² gives the range as "Tennessee, Arkansas, Alabama and Texas; wohl auch in den dazwischen liegenden Staaten."

We have the species as *Waterfall 6494*, limestone prairie, 4 miles northeast of Sulphur, Murray County, June 3, 1946.

**TRILLIUM RECURVATUM* Beck is easily recognized by the sessile flowers, petiolate leaves, ovate-lanceolate petals, and short reflexed sepals. We have it as *C. W. Prier*, sin num., in woods and thickets, Tahlequah, Cherokee County, April 7, 1925. Gates³ says the species occurs from "Ohio to Minnesota, south to Mississippi and Arkansas. Fernald (Gray's Manual, 445. 1950) likewise gives Arkansas as the western limit of its range.

POLYGONUM HYDROPIPEROIDES* Michx., var. *BUSHIANUM* Stanford, forma **rubrum, *Waterfall*, f. nov.; folium rubris zonis. The type of the form having leaves with red markings, often V-shaped, is *Waterfall 10484*, swamp, Grassy Lake, 4 miles south and 4 east of Tom, McCurtain County, October 13, 1951. It is in the Herbarium of Oklahoma A. & M. College.

**POLYGONUM SAGITTATUM* L. Easily recognized by the capitate inflorescences, sagittate leaves and retrorse-prickly, 4-angled stems is this species collected as *Waterfall 10420*, ditch, 2.5 miles north of Tom, McCurtain County, October 13, 1951.

**SUCKLEYA SUCKLEYANA* (Torr.) Rydb. This monotypic genus is characterized by the bracts of the fruit being united to the summit, rather

¹ Trans. St. Louis Acad. Sci. 2: 454. 1868.

² Buchenau, Fr. Juncaceae, Das Pflanzenreich . . . 4 (36): 244. 1906.

³ Gates, R. R. A Systematic Study of the North American Genus *Trillium* . . . Ann. Mo. Bot. Gard. 4: 49. 1917.

than free as in *Atriplex* which it somewhat resembles. These bracts are also obcompressed and dorsally carinate. These features are well shown in a plate published with the original description.⁴ In the North American Flora (21 (1): 74. 1916) Standley states that the species occurs "in valleys, Montana to Colorado." Hershey and Leyendecker (Leaf. W. Bot. 4: 23. 1944) report it from Union and Quay Counties, New Mexico. We have it as *Waterfall 9696*, sand, bed of the Cimarron River, one-half mile north of Kenton, Cimarron County, October 6, 1950.

**MIRABILIS GIGANTEA* (Standley) Shinnars. This species, characterized by its glabrous, ovate or ovate-oblong leaves, upwardly-incurved pubescent stems and puberulent involucre, was described⁵ from sands in Dallas County, Texas. Shinnars⁶ states that it is "a restricted endemic of north-central Texas from the Red River south to Waco, and from Dallas west to Weatherford." To this species is referred *Waterfall 9150*, sand north of Thackerville, Love County, July 14, 1949. This area is a few miles north of the Red River and north-central Texas.

**SAPONARIA VACCARIA* L., characterized by the large 5-winged fruiting calyx, was collected as *Rose*, sin num., 8 miles west of Ada, Pontotoc County, June 9, 1941.

**NUPHAR OVATUM* (Mill. & Standl.) Standl. This species, characterized by the densely pubescent under-leaf surfaces and narrow leaf sinuses, is represented in our herbarium by *Stratton 569*, in water, 1 mile west of Broken Bow, McCurtain County, September 11, 1927. Described from Texas,⁷ the distribution of the species was stated by Fernald (Gray's Manual: 639. 1950) to be "e. Tex., north to se. Kansas."

EUPHORBIA MISSURICA Raf., var. **callicola** (Shinnars) Waterfall, comb. nov., *Chamaesyce missurica* (Raf.) Shinnars, var. *callicola* Shinnars, Field and Laboratory 17: 69. 1949. This transfer is made to keep the above taxon in the genus *Euphorbia*, rather than segregated into *Chamaesyce*. Shinnars (l. c.) states that the range of var. *callicola* includes Oklahoma, Kansas and Missouri as well as Texas.

RHAMNUS CAROLINIANA Walt., var. *MOLLIS* Fern. This variety, with leaves pubescent beneath, was reported from the Arbuckle Mts. by E. J. Palmer.⁸ In our herbarium we have a sheet, *John G. Brown*, sin num., rocky sandy soil, hillside 0.8 miles northeast of Tahlequah, Cherokee County, October 5, 1946.

**SIDA RHOMBIFOLIA* L. This species somewhat resembles *S. spinosa*, but has cuneate-based, short-petiolate (2–4 mm.) leaves, and peduncles

⁴ Gray, Asa. A Catalogue of Plants Collected East of the Rocky Mountains. Pacif. Railroad Reports. 12, pt. 2, no. 2: 47 + Pl. 4. 1860.

⁵ Standley, Paul C. Allioniaceae of the United States. Cont. U. S. Natl. Herb. 12: 348. 1909.

⁶ Shinnars, Lloyd H. North Texas Species of *Mirabilis*. Field and Lab. 19: 177–178. 1951.

⁷ Miller, Gerrit S. and Paul C. Standley. The North American Species of *Nymphaea*. Contr. U. S. Natl. Herb. 16: 97–99. 1912.

⁸ Palmer, Ernest J. Notes on Some Oklahoma Plants. Journ. Arn. Arb. 15: 133. 1934.

several times longer (10–15 mm.) than the petioles of the leaves. In *S. spinosa* the cauline leaves are usually cordate, long-petiolate (10–20 mm.), and the peduncles are shorter (3–13 mm.) than the petioles. We have it as *Waterfall 9816*, edges of Taxodium swamp, 3 miles south of Eagletown, McCurtain County, October 21, 1950; and *Waterfall 10491*, swamp, Grassy Lake, 4 miles south and 4 east of Tom, McCurtain County, October 13, 1951. Small (Manual p. 850. 1933) states that the species occurs in the "Coastal plain, Florida to Texas and North Carolina."

**ASCYRUM HYPERICOIDES* L., var. *OBLONGIFOLIA* (Spach) Fern. This Coastal Plain variety, having single stems branched above, oblong-lanceolate leaves and elongate flowering branches, was collected as *Waterfall 10452*, wooded flats with *Sabal*, 3 miles south of Tom, McCurtain County, October 13, 1951. Fernald (*RHODORA* 38: 433. 1936) says it ranges from "Florida to Mississippi, north to eastern Maryland, western Tennessee and southeastern Missouri."

**HYPERICUM PERFORATUM* L. This introduced species was collected as *Waterfall 10160*, disturbed prairie, 2 miles east of Braggs, Muskogee County, July 10, 1951.

**HYPERICUM TUBULOSUM* Walt., var. *WALTERI* (Gmel.) Lott, is characterized by the 9 stamens in 3 bundles alternating with 3 glands, and by the oblong leaves. It was collected as *Waterfall 9797*, edges of Taxodium swamp, 3 miles south of Eagletown, McCurtain County, October 21, 1950, and *No. 10409*, Taxodium swamp, 3 miles north and 1 east of Eagletown, McCurtain County, October 13, 1951. In Gray's Manual, ed. 8, Fernald states that the range includes "Cypress and gum swamps, Florida to Texas, north to . . . south Indiana and southeast Missouri."

**ANGELICA VENENOSA* (Greenway) Fern. This pubescent-fruited *Angelica* was collected as *Waterfall 10175*, richly wooded valley, 6 miles northeast of Scraper, in Adair County, July 11, 1951. Mathias and Constance (*N. Am. Fl.* 28B (2): 199) give as the distribution of this species "Massachusetts to Florida, west to Minnesota and Mississippi."

CYMOPTERUS MACRORHIZUS Buckl. This species, recognizable by its scarious bractlets, fruit-wings nearly uniform rather than enlarged toward the base, and fruiting peduncles overtopping the leaves, is represented in our herbarium by *Waterfall 5536*, gypseous soil overlaying gypsum, low gyps hills, 1 mile west and ½ south of Weatherford, Custer County, May 13, 1944, and by *Stratton 6840*, gravelly clay pasture, 1.7 miles west and 2.4 north of Elk City, Beckham County, May 10, 1948 (det. by Lincoln Constance).

Mathias and Constance (l.s. 172.) state that the distribution of the species is in central Texas.

**IPOMOEA HEPTAPHYLLA* (Rottb. & Willd.) Voight is easily recognized by its palmately 5–7 parted leaves and its filiform peduncles that sometimes spiral around adjacent objects. Small (Manual. 1087. 1933) says "near New Orleans, La., Nat. of Trop. regions." It was collected as *Waterfall 9831*, old field 4 miles south of Idabel, McCurtain County, October 21, 1950. Here it was quite abundant.

GERARDIA PECTINATA (Nutt.) Benth. This species, characterized by its pinnatifid calyces and leaves, was cited from LeFlore County by Pennell⁹ with the comment "species new to Oklahoma." We have it as *Waterfall 9847* in oak-pine woods on slopes near top of the Kiamichi Mountains, 3 miles east and 6 south of Albion, Pushmataha County, October 22, 1950.

*PHYSOSTEGIA ANGUSTIFOLIA Fern. So referred are: *Waterfall 10007*, shallow soil on rock strata, 6 miles north of Braggs, Muskogee County, June 9, 1951; and *Waterfall 10088*, wet area in prairie 1.5 miles southeast of Braggs, Muskogee County, July 3, 1951. In our specimens the leaves are narrow and rigid as described by Fernald (RHODORA 45: 462, 463, 1943). The fruiting inflorescences usually become rather remotely-flowered; however when first beginning to flower, they are often rather dense.

*VERONICA POLITA Fries. This blue-flowered, long-pedicelled species is abundant on our campus, and various other places in this area in the early spring. We have it as *Waterfall 9900*, lawn, Oklahoma A. & M. Campus, Stillwater, Payne County, April 25, 1951.

*HEDYOTIS BOSCHII DC. was collected as *Waterfall 10453*, wooded flats with *Sabal*, 3 miles south of Tom, McCurtain County, October 13, 1951. In Gray's Manual (1330, 1950) the range is given as Florida to Texas, north to southeast Virginia, Tennessee and southeast Missouri.

*VALERIANELLA BUSHII Dyal. This species has flowers resembling those of *V. longiflora*, but has narrow, oblong pubescent fruits, with the sterile cells narrower than the fertile one, rather than orbicular fruit with large inflated widely divergent sterile cells as has *V. longiflora*. Dyal¹⁰ cited specimens from Missouri and Arkansas. We have it as *Traylor 71*, sandy soil, northwest end of Spavinaw Lake, Mayes County, May 4, 1945; and *Wallis 500A*, open gravel bank of creek 0.7 miles south of Adair County line and 0.5 miles east of State highway 10, Cherokee County, May 27, 1951.

*LOBELIA SPICATA Lam., var. LEPTOSTACHYS (A. DC.) Mackenz. & Bush. In 1936 (RHODORA 33: 306) and again in 1942 (N. Am. Fl. 32A (1): 73) McVaugh gave "eastern Kansas and western Arkansas" as the western limit of the range of this variety. It is represented in our herbarium by *Waterfall 9574*, wooded valley, 3 miles south of Kansas, Adair County, July 7, 1950.

*ARTEMISIA LUDOVICIANA Nutt., var. LATIFOLIA (Bess.) T. & G. Referred to this variety are: *Waterfall 9702*, bank of Carrizozo Creek, 2 miles west of Kenton, Cimarron County, October 7, 1950 and *Waterfall 9725*, north slopes of Black Mesa, 3 miles north of Kenton, Cimarron County, October 7, 1950.

These collections have the short (3–4 cm. long), relatively broad leaf

⁹ Pennell, Francis W., The Scrophulariaceae of Eastern Temperate North America. Acad. Nat. Sci. Phila. Monog. 1: 404. 1935.

¹⁰ Dyal, Sarah C. Valerianella in North America. RHODORA 40: 20. 1938.

blades as described for var. *latifolia* (Gray's Manual. 1523. 1950). No. 9725 has divergent elongated branches.

**ASTER LINARIIFOLIUS* L. is represented in our herbarium by *Waterfall 9866*, in pine-oak woods, 10 miles north of Broken Bow, McCurtain County, October 22, 1950. Small (Manual. 1395. 1933) gave the range of this species (under *Ionactes*) as Florida to Texas, Minnesota and Michigan.

**BACCHARIS HALAMIFOLIA* L. Fernald (Gray's Manual. 1448, 1950) says this species occurs in open woods, thickets and borders of marshes near the coast, Florida to Texas and Mexico, north to coast of Massachusetts. We have it as *Waterfall 9827*, old field 4 miles south of Idabel, McCurtain County, October 21, 1950.

**COREOPSIS TRIPTERIS* L., var. *DEAMII* Standl. This variety, having leaves pubescent beneath, was collected as *Waterfall 10166*, open woods on stony slopes 1 mile east and 3 south of Kansas, Delaware County, July 11, 1951. Standley¹¹ in describing this variety cited specimens from Illinois, Indiana, Michigan, Missouri, Arkansas, Pennsylvania, North Carolina and Georgia.

**ECHINACEA PURPUREA* (L.) Moench, var. *ARKANSANA* Steyermark. *Burris 65*, sandy clay, 4 miles west of Idabel, McCurtain County is so referred. It has the smaller leaves, heads, rays, paleas and slender stem as described by Steyermark¹² from Sevier County, Arkansas.

**ERECTITES HIERACIFOLIA* (L) Raf., var. *INTERMEDIA* Fern. This variety, with broad-based sessile leaves which are reduced below the inflorescence, was collected as *Waterfall 9865*, slopes of mountain, hairpin curve, 12 miles southeast of Bethel, McCurtain County, October 22, 1950. Fernald (Gray's Manual. 1528. 1950) says it occurs from P. E. I. to west Ontario, south to Florida and Texas.

**ERECTITES HIERACIFOLIA* (L.) Raf., var. *PRAEALTA* (Raf.) Fern. The variety with upper leaves attenuate at the base was collected as *Waterfall 9781*, edges of Taxodium swamps, 3 miles south of Eagletown, McCurtain County, October 21, 1950. In Gray's Manual (l. c.) the range is given as Quebec to Wisconsin, south to Florida and Tennessee.

**EUPATORIUM CAPILLIFOLIUM* (Lam.) Small. This species, having finely-divided leaves, was collected as *Waterfall 10499*, old field, 0.5 miles north of Tom, McCurtain County, October 14, 1951. In Gray's Manual (1365. 1950) the western part of the range is stated to be ". . . to Texas, north to New Jersey."

**EUTHAMIA LEPTOCEPHALA* (T. & G.) Greene. So referred is *Waterfall 10489*, old field, 0.5 miles north of Tom, McCurtain County, October 14, 1951. Shinnars¹³ states that this is the common *Euthamia* of eastern

¹¹ Standley, Paul C. New Forms and Varieties of Indiana Plants. RHODORA 32: 33-34. 1930.

¹² Steyermark, Julian A. Two Undescribed Plants from Arkansas. RHODORA 40: 71. 1938.

¹³ Shinnars, Lloyd H. The Texas Species of Euthamia. Field and Lab. 19: 137-138. 1951.

Texas. Fernald (Gray's Manual: 1412. 1950) includes "east Texas . . . and south Missouri" in the range of this species.

**HELIANTHUS HIRSUTUS* Raf., var. *TRACHYPHYLLUS* T. & G. This variety, without long-hirsute internodes and with broad leaves, is represented by *Waterfall 10270*, oak-hickory woods, 4 miles southeast of Braggs, Muskogee County, July 19, 1951. Fernald (Gray's Manual: 1492. 1950) gives the range as west Pennsylvania to Wisconsin and Iowa, south to Tennessee and Arkansas.

**HIERACIUM GRONOVII* L., var. *FOLIOSUM* Michx. is said to have "numerous cauline leaves extending nearly or quite into the inflorescence, . . . oval and rounded at the summit . . ." (*RHODORA* 37: 185. 1935). Such material was collected as *Waterfall 10427*, pine-oak woods, 2 miles north of Tom, McCurtain County, October 13, 1951. Fernald (l. c.) says "it is dominant on the coastal plain, extending . . . northward in the interior to southern Indiana and Missouri."

**SOLIDAGO RUGOSA* Mill., var. *ASPERA* (Ait.) Fern. So referred is material collected as *Waterfall 9821*, edges of Taxodium swamp, 3 miles south of Eagletown, McCurtain County, October 21, 1950. The leaves are rugose, but the branches are not elongated and divergent as in var. *celtidifolia*, and they produce flowers throughout most of their length. Fernald (*RHODORA* 38: 222. 1936) includes Texas and Missouri in the western part of the range of this variety.

**SOLIDAGO RUGOSA* Mill., var. *CELTIDIFOLIA* (Small) Fern. So referred is *Hopkins 5602*, deep, rich pine-oak-gum-hickory woods on slope of Rich Mountain, Ouachita Mountains, near Page, LeFlore County, October 13, 1940.

This specimen has the prolonged divergent branches, floriferous above the middle as Fernald describes var. *celtidifolia*.¹⁴ This variety has been recorded previously from as far west as the neighboring states of Texas and Arkansas by both Small (*Flora* . . . 1198. 1903) and Fernald (l. c.).—DEPARTMENT OF BOTANY AND PLANT PATHOLOGY, OKLAHOMA A. & M. COLLEGE, STILLWATER, OKLAHOMA.

COLOR-FORMS OF THE MAY-APPLE

JULIAN A. STEYERMARK

IN 1948 Dr. Marcel Raymond of the Montreal Botanical Garden described (*RHODORA* 50: 18) *Podophyllum peltatum* f. *Deamii*, based upon a plant with maroon or dark-reddish fruit found originally by Dr. C. C. Deam in 1927 in "a wood on the Arthur Miller farm near Mauckport, Harrison County," Indiana. From the living plants grown by Deam in his garden and sent to the Montreal Botanical Garden, the latter institution succeeded

¹⁴ Fernald, M. L. *RHODORA* 38: 223-224. 1936.